UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,591	01/09/2002	Earl Vickers	2045.267US1	6349

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EXAMINER
LAO, LUN S

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
03/18/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@slwip.com
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PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2010*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22-36* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *22-34* is/are rejected.
7)☒ Claim(s) *35,36* is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Introduction

1.   This action is in response to the amendments filed on 01-20-2010.

Claims 1-21 have been canceled and claims 22-36 have been amended. Claims 22-36

are pending.

Continued Examination Under 37 CFR 1.114

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth

in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01-20-

2010 has been entered.

Claim Objections

3. Claim 22 is objected to because of the following informalities: Claim 22 recited "that

" on line 7, which appears to be --- ~~that~~ <u>than</u> ---. Appropriate correction is required.

4. Claim 30 is objected to because of the following informalities: Claim 30 recited "that

" on line 10, which appears to be --- ~~that~~ <u>than</u> ---. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Silfvast et al. (US PAT.5524060) in view of Kuhn et al. (US PAT. 6414960).

   Consider claim 22 Silfvast teaches a method of adjusting the dynamics of a digital

audio track (reads on the cup(microprocessor), because the digital effect processor can

also be applied to digital audio tracks and see abstract), the method implemented on a

computerized system, comprising: determining(see fig. 10(169,171,170,173)) an

apparent loudness weighting for the plurality of frames of the audio track such that the

weighting emphasizes the relatively greater effect that louder frames have on loudness

perception, while including the contribution to overall loudness made by less loud

frames(see col. 7 line 43-col. 8 line 61); and adjusting(Knobs, Bypass, link dyn and see

col. 1 line 28-35) the loudness of the track based on the determined loudness levels and

apparent loudness weighting of the plurality of frames so that the apparent loudness of

the track matches a desired apparent loudness(see figs. 3,4, 7a-7c, 10 and see col.14

line 41-col. 15 line 32); but Silfvast does not explicitly teach evaluating an audio track to

determine the loudness levels of a plurality of frames in the audio track such that the

loudness levels of the plurality of frames are representative of the loudness distribution

of frames across the entire audio track.

However, Kuhn teaches evaluating (by testing signal (white noise) see fig. 5 (380)) an

audio track to determine the loudness levels (340) of a plurality of frames in the audio

track such that the loudness levels of the plurality of frames(see figs. 4A,4B) are

representative of the loudness distribution of frames across the entire audio track (see

figs. 4A-5, 10-12 and col. 6 line 66-col. 7 line 67, col. 9 line19-col. 10 line 64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teaching of Kuhn into Silfvast to provide

a highly efficient and compact way of mapping the statistics of actual audio signal for

the sound system.

Consider claims 23-25 Silfvast as modified by Kuhn teaches the method of adjusting

the dynamics of a digital audio track wherein evaluating an audio track to determine the

distribution of loudness levels present in the audio track comprises determining levels

for all frames comprising the audio track(In Kuhn, see fig. 10 and col. 9 line19-col. 10

line 64); and the method of adjusting the dynamics of an audio track wherein evaluating

a digial audio track to determine loudness levels for a plurality of frames in the audio

track comprises determining levels for frames sampled from across all frames

comprising the audio track(In Kuhn, see figs. 4-9 and col. 7 line16-col. 8 line 67); and

the method of adjusting the dynamics of a digital audio track wherein evaluating an

audio track to determine loudness levels for a plurality of frames in the audio track

comprises determining levels for all frames in the audio track(In Kuhn, see figs. 4-9 and

col. 7 line16-col. 8 line 67).

Consider claims 26-29 Silfvast as modified by Kuhn teaches the method of adjusting

the dynamics of a digital audio track further comprising using an emphasis parameter to

derive the apparent loudness weight of an individual frame of the audio track such that

the apparent loudness weight comprises the emphasis parameter raised to the negative

power of a loudness value for the frame(see figs. 3,4, 7a-7c, 10 and see col.14 line 41-

col. 15 line 32); and the method of adjusting the dynamics of a digital audio track

wherein at least one of evaluating an audio track to determine the loudness levels of a

plurality of frames and determining an apparent loudness weighting for the plurality of

frames comprises performing such calculations based on loudness value distribution

information for the audio track represented in a histogram(In Kuhn, see figs. 4-9 and

col. 7 line16-col. 8 line 67); and the method of adjusting the dynamics of a digital

 audio track, wherein the apparent loudness weight is frequency-weighted to

compensate for perceived loudness differences at different frequencies(see figs. 3,4,

7a-7c, 10 and see col.14 line 41-col. 15 line 32); and the method of adjusting the

dynamics of an audio track wherein adjusting the loudness of the track comprises

combining aggregated weighted loudness values to determine apparent loudness for

the track (see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32).

Consider claim 30 Silfvast teaches a method of adjusting the dynamics of a digital

audio track(reads on the cup(microprocessor), because the digital effect processor can

also be applied to digital audio tracks and see the abstract), the method implemented

on a computerized system, comprising: using the loudness levels of a plurality of frames

in the audio track to calculate a dynamic spread of the audio track(se figs. 4, 10);

determining a non-linear compressor transfer function configured to produce a desired

dynamic spread (see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32) the non-

linear compressor transfer function comprising greater dynamic range compression at

high loudness levels(reads on, ratio of 10) that at low loudness levels(reads on, ratio of

1)(see col. 7 line 43-67); and applying the determined non-linear compressor transfer

function to the audio track to produce an audio track with the desired dynamic spread

(see figs. 7a-7c, 10-11b and see col.15 line 3-col. 16 line 32); but Silfvast does not

explicitly teach evaluating an audio track to determine the loudness levels of a plurality

of frames in the audio track such that the loudness levels of the plurality of frames are

representative of the loudness distribution of frames across the entire audio track.

However, Kuhn teaches evaluating (by testing signal (white noise) see fig. 5 (380))

an audio track to determine the loudness levels(340) of a plurality of frames in the audio

track such that the loudness levels of the plurality of frames (see figs 4A,4B) are

representative of the loudness distribution of frames across the entire audio track

(see figs. 4A-5, 10-12 and col. 6 line 66-col. 7 line 67, col. 9 line19-col. 10 line 64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time

the invention was made to combine the teaching of Kuhn into Silfvast to provide

a highly efficient and compact way of mapping the statistics of actual audio signal for

the sound system.

Consider claims 31-34 Silfvast as modified by Kuhn teaches the method of adjusting

the dynamics of a digital audio track further comprising adjusting the loudness of the

track based on the determined loudness levels so that the apparent loudness of the

track matches a desired apparent loudness (see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32); and the method of adjusting the dynamics of a digital audio track wherein a threshold between linear segments of the non-linear compressor transfer function is based on statistical analysis of audio track(see figs. 3, 4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32); and the method of adjusting the dynamics of a digital audio track wherein the threshold is at specified percentile domain of loudness levels in the audio track(see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32); and the method of adjusting the dynamics of an audio track further comprising normalizing the loudness of the specified percentile domain of loudness levels in audio track to a desired loudness level(see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32).

Allowable Subject Matter

7. Claims 35, 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments filed 01-20-2010 have been fully considered but they are not persuasive.

Applicant argued that Silvfast fails to teach adjusting based on the determined apparent loudness of the track and a desired apparent track loudness, while no track loudness or desired apparent track loudness (see the remarks page 8 fifth paragraph).

The Examiner respectfully disagrees.   Silfvast discloses adjusting((see fig. 10 (Knobs, Bypass, LINK, DYN) and see col. 1 line 28-35) the loudness of the track based on the determined loudness levels and apparent loudness weighting of the plurality of frames so that the apparent loudness of the track matches a desired apparent loudness(see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32). It meets the limitation as recited in claim.

Applicant further argued with that Kuhn fail to teach determining the loudness of a plurality of frames in an audio track to determine the loudness distribution of frames across an entire audio track (see the remarks page 8 last paragraph).

The Examiner respectfully disagrees with that. Kuhn discloses evaluating (by testing signal (white noise) see fig. 5 (380)) an audio track to determine the loudness levels (340) of a plurality of frames in the audio track such that the loudness levels of the plurality of frames(see figs. 4A,4B) are representative of the loudness distribution of frames across the entire audio track (see figs. 4A-5, 10-12 and col. 6 line 66-col. 7 line 67, col. 9 line19-col. 10 line 64). The combination meets the limitation as recited in claim 22.

Applicant argued with that. Silvfast fails to teach a dynamic spread of the audio track, and determining a non-linear compressor transfer function configured to produce a desired dynamic spread having greater dynamic range compression at high loudness levels that at low loudness levels(see the remarks page 9 last paragraph).

The Examiner disagrees with that. Silfvast discloses a dynamic spread of the audio track(se figs. 4, 10); determining a non-linear compressor transfer function configured to

produce a desired dynamic spread (see figs. 3,4, 7a-7c, 10 and see col.14 line 41-col. 15 line 32) the non-linear compressor transfer function comprising greater dynamic range compression at high loudness levels(reads on, ratio of 10) that at low loudness levels(reads on, ratio of 1)(see col. 7 line 43-67); and applying the determined non-linear compressor transfer function to the audio track to produce an audio track with the desired dynamic spread (see figs. 7a-7c, 10-11b and see col.15 line 3-col. 16 line 32).

   Applicant further argued with that. Kuhn fails to teach evaluating an audio track to determine the loudness levels of a plurality of frames in the audio track such that the loudness levels of the frames are representative of the loudness distribution across the entire audio track(see the remarks page 10 last paragraph).

    The Examiner respectfully disagrees with that. Kuhn discloses evaluating (by testing signal (white noise) see fig. 5 (380)) an audio track to determine the loudness levels (340) of a plurality of frames in the audio track such that the loudness levels of the plurality of frames(see figs. 4A,4B) are representative of the loudness distribution of frames across the entire audio track (see figs. 4A-5, 10-12 and col. 6 line 66-col. 7 line 67, col. 9 line19-col. 10 line 64). The combination meets the limitation as recited in claim 30.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cranfill et al. (US PAT. 7,242,784) is recited to show other related method and apparatus for audio loudness and dynamics matching.

10.   Any response to this action should be mailed to:

        Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

        Commissioner for Patents
        P.O. Box 1450
        Alexandria, VA 22313-1450
    Facsimile responses should be faxed to:
        (571) 273-8300
    Hand-delivered responses should be brought to:
        Customer Service Window
        Randolph Building
        401 Dulany Street
        Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Lao, Lun-See whose telephone number is (571) 272-7501 The examiner

can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See
/LUN-SEE LAO/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 03-10-2010

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2614